CLAIMS:

1. A display device comprising a plurality of independently addressable pixels, wherein said pixels comprise: a first substrate; a second substrate; an electrochromic material disposed between said first substrate and said second substrate; at least two independent electrodes associated with said first substrate; an independent counter-electrode associated with said second substrate; wherein each respective electrode is connected to an independently controllable voltage source; said display device has means for controlling the voltage applied to each respective electrode for producing non-uniform electric fields in each pixel, for causing partial switching of the electrochromic material from a first state to a second state to generate an area-ratio-defined pixel gray level.

2. The display device of claim 1, wherein said display device further has means for controlling the time during which voltage is applied to each respective electrode.

3. The display device of claim 1, wherein said display device further has means for controlling the voltage applied to each respective electrode of the pixel when in the second state, to cause a reset from the second state to the first state.

4. The display device of claim 1, wherein said display device further has memory storage means for storing a previously generated gray level.

5. The display device of claim 4, wherein said display device further has means for comparing a gray level to be achieved with a previously generated gray level.

6. The display device of claim 5, wherein said display device further has means for determining the required potential to be applied to each respective electrode in order to reach a desired gray level.

7. A method for generating analog gray scales in a pixel of a display device having a first substrate, a second substrate and an electrochromic material disposed between said first substrate and said second substrate, the method comprising the steps of:

providing at least two independent electrodes to be associated with said first substrate;

providing an independent counter-electrode to be associated with said second substrate;

providing a connection of each respective electrode to an independently controllable voltage source;

providing means for controlling the voltage applied to each respective electrode for producing non-uniform electric fields in each pixel, for causing partial switching of the electrochromic material from a first state to a second state to generate an area-ratio-defined pixel gray level.

8. The method of claim 7, further comprising the step of:

providing means for controlling the time during which voltage is applied to each respective electrode.

9. The method of claim 7, further comprising the steps of:

providing memory storage means for storing a previously generated gray level;

providing means for comparing a gray level to be achieved with a previously generated gray level;

providing means for determining the required potential to be applied to each respective electrode in order to reach a desired gray level.

10. A computer program product directly loadable into the internal memory of a digital computer comprising software code portions for performing the following steps when said product is run on a computer:

providing a connection to an independently controllable voltage source for at least two independent electrodes of an independently addressable pixel of an electrochromic display device;

providing control of the voltage applied to each respective electrode for producing non-uniform electric fields in each pixel;

providing control of the time during which voltage is applied to each respective electrode.

11. A computer program product stored on a computer-readable storage medium, comprising computer-readable program code means for causing a computer to perform the following steps:

providing a connection to an independently controllable voltage source for at least two independent electrodes of an independently addressable pixel of an electrochromic display device;

providing control of the voltage applied to each respective electrode for producing non-uniform electric fields in each pixel;

providing control of the time during which voltage is applied to each respective electrode.